

DMG963HE

Silicon NPN epitaxial planar type (Tr1)
Silicon PNP epitaxial planar type (Tr2)

For digital circuits

■ Features

- Low collector-emitter saturation voltage $V_{CE(sat)}$
- Halogen-free / RoHS compliant
(EU RoHS / UL-94 V-0 / MSL: Level 1 compliant)

■ Marking Symbol: V2

■ Basic Part Number

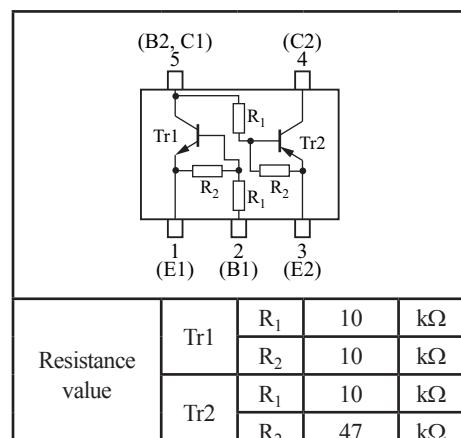
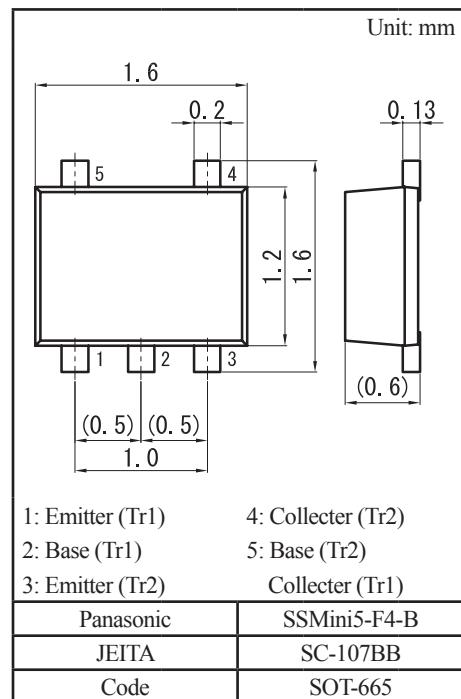
DRC2114E ± DRA2114Y (collector-base connection)

■ Packaging

DMG963HE0R Embossed type (Thermo-compression sealing); 8 000 pcs / reel (standard)

■ Absolute Maximum Ratings $T_a = 25^\circ\text{C}$

Parameter		Symbol	Rating	Unit
Tr1	Collector-base voltage (Emitter open)	V _{CBO}	50	V
	Collector-emitter voltage (Base open)	V _{CEO}	50	V
	Collector current	I _C	100	mA
Tr2	Collector-base voltage (Emitter open)	V _{CBO}	-30	V
	Collector-emitter voltage (Base open)	V _{CEO}	-30	V
	Collector current	I _C	-100	mA
Overall	Total power dissipation	P _T	125	mW
	Junction temperature	T _j	150	°C
	Operating ambient temperature	T _{opr}	-40 to +85	°C
	Storage temperature	T _{stg}	-55 to +150	°C



■ Electrical Characteristics $T_a = 25^\circ\text{C} \pm 3^\circ\text{C}$

• Tr1

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Collector-base voltage (Emitter open)	V_{CBO}	$I_C = 10 \mu\text{A}, I_E = 0$	50			V
Collector-emitter voltage (Base open)	V_{CEO}	$I_C = 2 \text{ mA}, I_B = 0$	50			V
Collector-base cutoff current (Emitter open)	I_{CBO}	$V_{CB} = 50 \text{ V}, I_E = 0$			0.1	μA
Collector-emitter cutoff current (Base open)	I_{CEO}	$V_{CE} = 50 \text{ V}, I_B = 0$			0.5	μA
Emitter-base cutoff current (Collector open)	I_{EBO}	$V_{EB} = 6 \text{ V}, I_C = 0$			0.5	mA
Forward current transfer ratio	h_{FE}	$V_{CE} = 10 \text{ V}, I_C = 5 \text{ mA}$	35			—
Collector-emitter saturation voltage	$V_{CE(\text{sat})}$	$I_C = 10 \text{ mA}, I_B = 0.5 \text{ mA}$			0.25	V
Input voltage (ON)	$V_{I(\text{on})}$	$V_{CE} = 0.2 \text{ V}, I_C = 5 \text{ mA}$	2.1			V
Input voltage (OFF)	$V_{I(\text{off})}$	$V_{CE} = 5 \text{ V}, I_C = 100 \mu\text{A}$			0.8	V
Input resistance	R_1		-30%	10	+30%	k Ω
Resistance ratio	R_1 / R_2		0.8	1.0	1.2	—

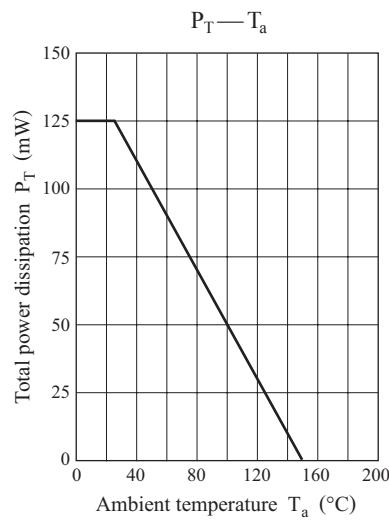
Note) Measuring methods are based on JAPANESE INDUSTRIAL STANDARD JIS C 7030 measuring methods for transistors.

• Tr2

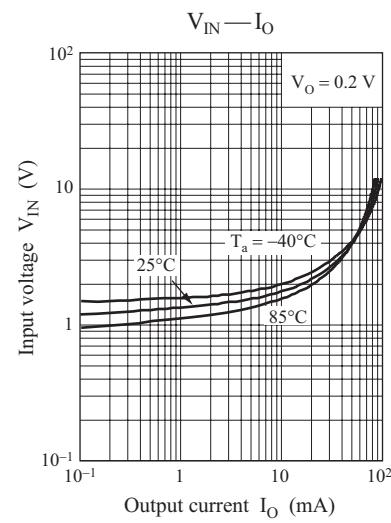
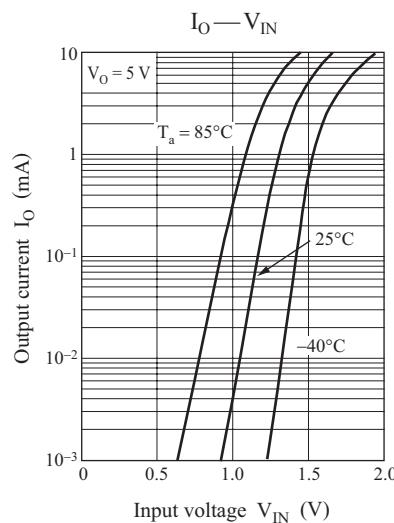
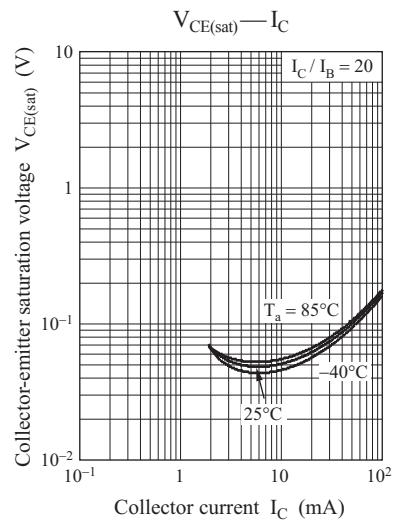
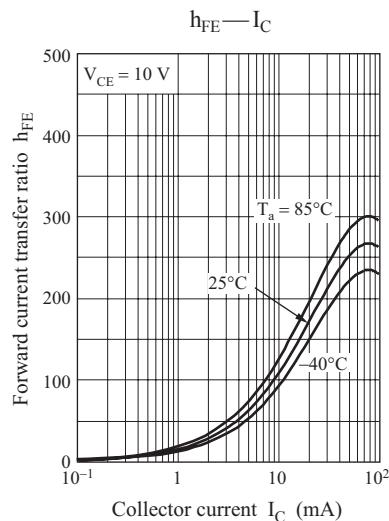
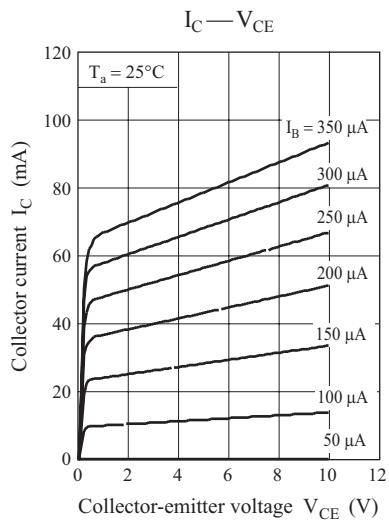
Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Collector-base voltage (Emitter open)	V_{CBO}	$I_C = -10 \mu\text{A}, I_E = 0$	-30			V
Collector-emitter voltage (Base open)	V_{CEO}	$I_C = -2 \text{ mA}, I_B = 0$	-30			V
Collector-base cutoff current (Emitter open)	I_{CBO}	$V_{CB} = -30 \text{ V}, I_E = 0$			-0.1	μA
Collector-emitter cutoff current (Base open)	I_{CEO}	$V_{CE} = -30 \text{ V}, I_B = 0$			-0.5	μA
Emitter-base cutoff current (Collector open)	I_{EBO}	$V_{EB} = -3 \text{ V}, I_C = 0$			-0.1	mA
Forward current transfer ratio	h_{FE}	$V_{CE} = -10 \text{ V}, I_C = -5 \text{ mA}$	80			—
Collector-emitter saturation voltage	$V_{CE(\text{sat})}$	$I_C = -50 \text{ mA}, I_B = -0.33 \text{ mA}$		-0.6	-1.2	V
Input voltage (ON)	$V_{I(\text{on})}$	$V_{CE} = -0.2 \text{ V}, I_C = -5 \text{ mA}$	-1.5			V
Input voltage (OFF)	$V_{I(\text{off})}$	$V_{CE} = -5 \text{ V}, I_C = -100 \mu\text{A}$			-0.5	V
Input resistance	R_1		-30%	10	+30%	k Ω
Resistance ratio	R_1 / R_2		0.16	0.213	0.27	—

Note) Measuring methods are based on JAPANESE INDUSTRIAL STANDARD JIS C 7030 measuring methods for transistors.

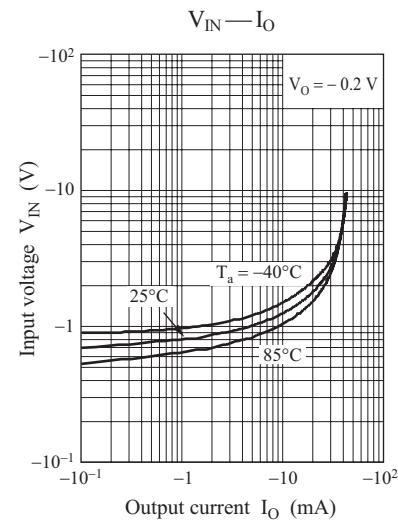
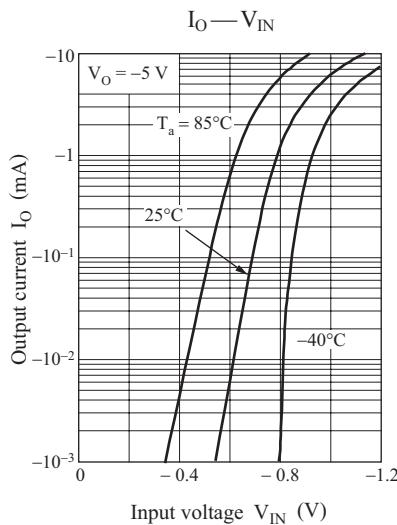
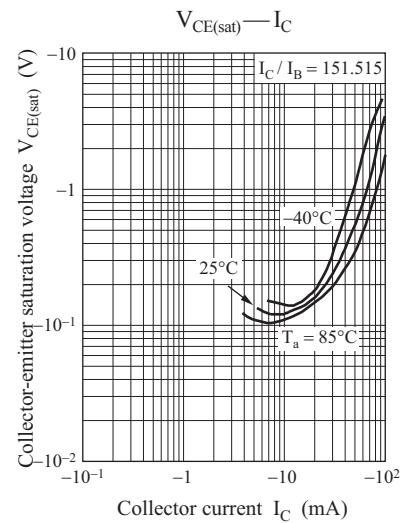
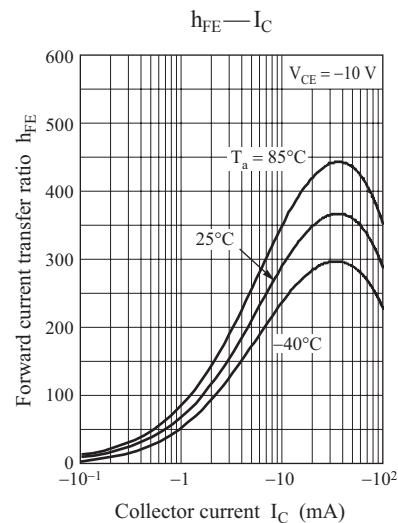
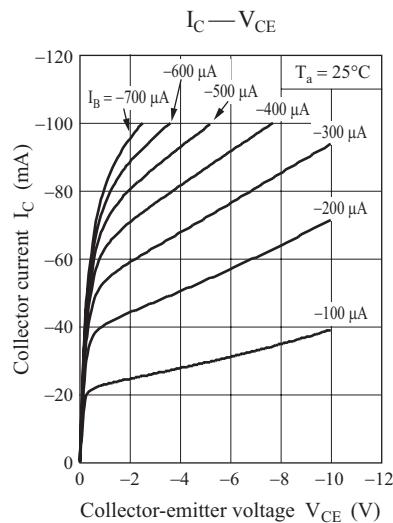
Common characteristics chart



Characteristics charts of Tr1

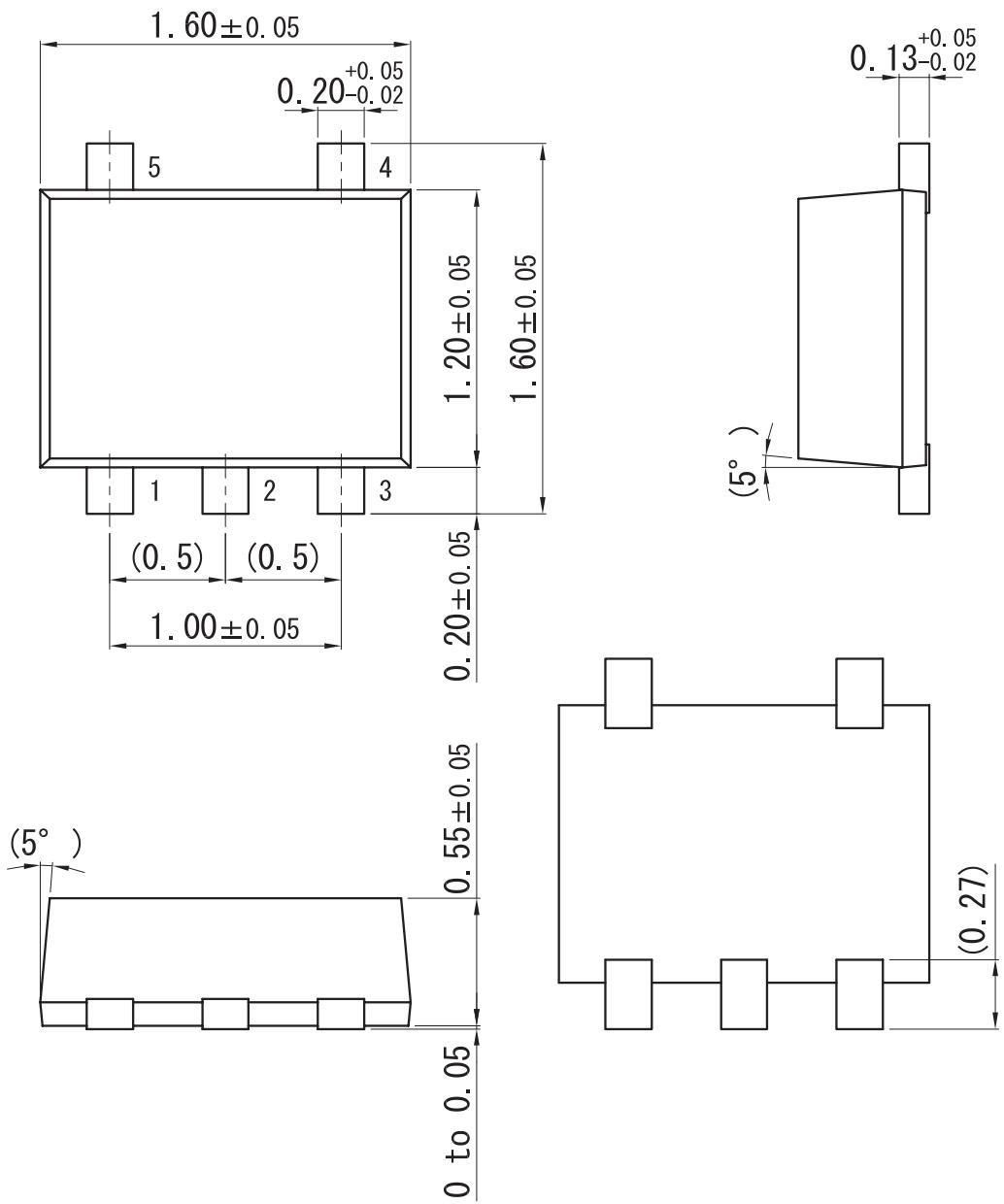


Characteristics charts of Tr2

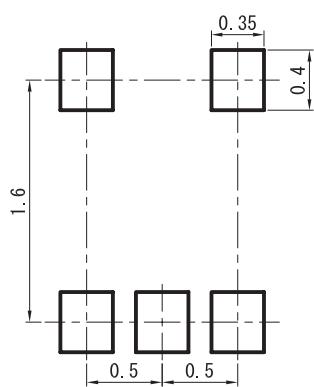


SSMini5-F4-B

Unit: mm



■ Land Pattern (Reference) (Unit: mm)



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